REMARKS

Applicants have carefully reviewed the Examiner's Office Action dated August 11, 2004, in which claims 7, 14 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In addition, claims 1-14 stand rejected under 35 U.S.C. 102(e) as being anticipated by Chouly (USPN 6,574,775); and claims 15-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chouly (USPN 6,574,775).

In view of the amendments made above and for the reasons states below, it is respectfully submitted that pending claims 1-22 are now in condition for allowance and, therefore, the Examiner's early allowance thereof is respectfully requested.

Rejection Under 35 U.S.C. Section 112, 2nd Paragraph

The rejection of claims 7, 14 and 22 under 35 U.S.C. section 112, second paragraph, is respectfully traversed. The Examiner has pointed out that claims 7, 14 and 22 recite the limitation "the bit number "a"" in line 1 and has alleged that there is insufficient antecedent basis for this limitation in the claims.

Accordingly, claims 7, 14 and 22 have been amended as set forth above to rectify the anomalies, as kindly pointed out by the Examiner, without adding any new matter. In particular, the limitation in the amended claims 7, 14 and 22 is clearly supported by the disclosure of the specification.

Therefore, it is believed that the above amendments made to the claims have removed the reason for the 112 rejection.

Rejection Under 35 U.S.C. 102(e)

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Chouly (USPN 6,574,775).

By way of review, the present invention is directed to a block coding and decoding method and apparatus; and, more particularly, to a block coding and decoding method and apparatus capable of increasing a code rate, as illustrated in Figs 2 and 3.

Regarding claims 1 and 8, the original block group of the present invention is formed before encoding the source bits, having n+1 original blocks of m-bit message, "m" being a positive integer and "n" being an odd integer greater than "m". To be more specific, referring to Fig. 4, assuming that a weighted block of 11-bit codeword is either an A type weighted block having four bits of "1" and seven bits of "0", or a B type weighted block having seven bits of "1" and four bits of "0", first, 12 original blocks OB1-1 to OB1-12 of 8-bit message are set to form a first original block group OG1 and a first original block OB1-1 of 8-bit message in the first original block group OG1 is represented as a first weighted block BB1-1 of 11-bit codeword. The first weighted block BB1-1 of 11-bit codeword is referred as a first reference block RB1 of 11-bit codeword, and 11 bits of the first reference block RB1 decide a weighting type of the original blocks OB1-2 to OB1-12 of 8-bit message.

In contrast, Chouly fails to disclose or even imply that the reference block is generated to indicate the type of the rest of the blocks in the block group. Chouly merely discloses the encoding of the source bits to implement the error correcting method in the communication system. The single bit, b_0, which is kindly indicated by the Examiner as a reference block, is just one element of the encoding vector and, does not indicate or designate the type of the encoding method of the rest of the blocks in the block group. In other words, the single bit b_0 does not contain any kind of indicator corresponding to the type of the weighted block, i.e., the A type or the B type weighted block.

Further, in the present invention, for decoding a received codeword, a sequence of reference bits from the n weighed blocks of n-bit codeword is generated, each reference bit implying that a corresponding weighted block is an A type weighted block or a B type weighted block. However, Chouly fails to teach or even imply the generation of the reference bits to imply the type of the weighted block during the decoding process. Furthermore, to decode the received codeword, each of pixel values in the block is summed up and represented as a total intensity sum, so that each block is finally classified into one of the two types of the weighted block. However, in Chouly, the modulo-2 summation is utilized to classify a received data, as described in column 4, lines 13-16.

Regarding claims 2-4 and 9-11, in the present invention, the reference block itself can be classified into one of the A type and B type weighted blocks, the A type weighted block corresponding to a bit of "1" and the B type weighted block

corresponding to a bit of "0". Further, the sequence of the reference bits is generated from the n weighed blocks of n-bit codeword, wherein each reference bit implies that a corresponding weighted block is an A type weighted block or a B type weighted block and, the sequence of the reference bit is identical to a bit sequence of a reference block of n-bit codeword.

In contrast, Chouly fails to disclose or even imply that the reference block itself can be classified into one of a plurality of block types. Chouly merely discloses that each bit of the received codeword is separated into two categories for decoding thereof. Further, the separation of the bits of the received codeword is only limited to the decoding process, in other words, in the encoding process, the source bits are not categorized into a plurality of types.

Regarding claims 5-7 and 12-14, in the present invention, the reference block of n-bit codeword is determined based on the order of the block group in which the reference block is included. To be more specific, if the original block group is a $(2N-1)^{st}$ original block group, the reference block of n-bit codeword is an A type weighted block, and if the original block group is a $2N^{th}$ original block group, the reference block of n-bit codeword is a B type weighted block, "N" being a positive integer. Chouly fails to disclose or even imply that the type of the reference block is determined based on the order of the block group.

Rejection Under 35 U.S.C. 103(a)

The rejection of claims 15-22 under 35 U.S.C. 103(a) as being unpatentable over Chouly (USPN 6,574,775) is respectfully traversed.

By way of review, the present invention is directed to encode a first block of the block group of the source bits into the reference block and the rest of the blocks in the block group the weighted code blocks. Further, the weighted code blocks are encoded based on the bit sequence of the reference block. Therefore, it is important to distinguish and recognize the first block of the block group of the source bits in order to indicate the type of the encoding method for the rest of the source data in the block group.

Regarding claim 15, in the present invention, a buffering device outputs a digitalized image signal on a basis of an original block of m-bit message and generates a timing signal for notifying when the original block is outputted and, a first control part determines whether the original block is a first original block of m-bit message when the timing signal is first generated from the first buffer. Further, there is provided a buffer having a reference buffer for storing a sequence of reference bits, wherein each reference bit implies whether the weighted block is an A type weighted block or a B type weighted block, and n buffers for storing bits of the weighted block provided from the storage medium; a second control part for determining whether the weighted block is an A type weighted block or a B type weighted block; and decoding part for decoding the weighted block to generate a corresponding original block of m-bit message and reconstructing the first original

block from the sequence of the reference bits. In this way, the reference bits can be extracted from the weighted code block, thereby saving the number of bits to be transmitted through the channel, resulting in the increase of the coding rate.

In contrast, Chouly discloses only the division of the received data into two categories for decoding thereof and totally silent on the encoding the source data based on the reference bits which are not actually transmitted through the channel. Further, for the method of separating the received data into two categories, the specific method is not explicitly disclosed in Chouly. It is the decoded data of the received data itself what is reconstructed in Chouly, not the reference bits as in the case of the present invention. Therefore, the effect of the coding rate reduction cannot be achieved while maintaining the desired BER.

Regarding claims 16 and 17, in the present invention, the first control part has a counting unit for counting the number of the timing signal provided from the first buffer and, the counting unit is reset on receiving an $(n+1)^{th}$ timing signal generated from the first buffer. In contrast, Chouly fails to disclose a counting unit for counting the number of the timing signal provided from the first buffer, which is because the reference block is not utilized for encoding the source data and, accordingly, the reference block is not reconstructed at the decoder.

Regarding claims 18 and 20, in the present invention, the reference block of n-bit codeword is an A type weighted block, wherein a bit of "1" in the reference block corresponds to an A type weighted block and a bit of "0" in the reference block corresponds to a B type weighted block. In contrast, Chouly only

discloses the separation of the received data into two categories and is totally silent on the type of the reference block itself.

Regarding claim 21, each sequence of the reference bits is obtained from each reference block at the decoder and, being identical to the bit sequence of the reference block of the original block group. However, Chouly fails to disclose even imply that the reference block is constructed at the encoder and reconstructed at the decoder to be the sequence of the reference bits, therefore, it is not even possible to say whether the bits of the reference block and the sequence of the reference bits are identical or not.

Regarding claim 22, a specific relation between 'm', 'n' and 'a' is provided, where 'a' is the number of '1' in the A type weighted block of n bits, which is not disclosed or even implied by Chouly.

Therefore, it is respectively submitted that Chouly is conceptionally and materially different from the present invention and that none of the features defined in the pending claims 15 - 22 are not disclosed, taught or even implied in Chouly.

As stated above, the prior art references do not show, independently or in combination, the noble features of the present invention as set forth in claims 1 - 22. Accordingly, it is respectfully submitted that claims 1 - 22 define an unobvious and patentable invention over and above the prior art reference, including Chouly collectively or individually, and are, therefore, allowable.

CONCLUSION

Applicants believe that this is a full and complete response to the Office Action. For the reasons discussed above, applicants now respectfully submit that all of the pending claims are in complete condition for allowance. Accordingly, it is respectfully requested that the Examiner's rejections be withdrawn; and that claims 1-22 be allowed in their present form.

Should the Examiner require or consider it advisable that the specification, claims an/or drawings be further amended or corrected in formal respects in order to place the case in condition for final allowance, then it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case be passed to issue.

Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

Respectfully submitted
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